CLAIMS:

1. A method comprising:

obtaining control symbols from a first wireless signal, the control symbols including pilot symbols and non-pilot symbols; and

using both the pilot symbols and the non-pilot symbols for frequency tracking of the first wireless signal.

2. The method of claim 1, wherein using both the pilot symbols and the non-pilot symbols for frequency tracking comprises generating soft decisions for the non-pilot symbols and using the pilot symbols and the soft decisions for frequency tracking of the first wireless signal.

3. The method of claim 2, wherein generating soft decisions for the non-pilot symbols comprises weighting each non-pilot symbol.

4. The method of claim 3, wherein the soft decisions comprise non-pilot symbols multiplied by a weight factor.

5. The method of claim 2, wherein using the pilot symbols and the soft decisions for frequency tracking includes calculating a cross-product to generate a residual frequency error estimate.

6. The method of claim 5, wherein calculating the cross-product comprises cross-multiplying one of the pilot symbols with a complex conjugate of one of the soft decisions.

7. The method of claim 5, wherein calculating the cross-product comprises cross-multiplying one of the soft decisions with a complex conjugate of one of the pilot symbols.

8. The method of claim 5, wherein calculating the cross-product comprises cross-multiplying a first set of the pilot symbols and soft decisions with a complex conjugate of a second set of the pilot symbols and soft decisions.

9. The method of claim 8, wherein the first set and the second set include at least one common symbol.

10. The method of claim 9, wherein the common symbol is a first symbol in the first set and a last symbol in the second set.

11. The method of claim 1, further comprising adjusting frequency of the first wireless signal in response to the frequency tracking.

12. The method of claim 2, wherein the soft decisions include a decision as to whether the symbol is a 1 or a –1 and a confidence level of the decision as to whether the symbol is a 1 or a –1.

13. The method of claim 2, wherein generating the soft decision includes applying a hyperbolic tangent function to calculate the soft decision.

14. The method of claim 2, wherein generating the soft decision includes applying an approximation of a hyperbolic tangent function to calculate the soft decision.

15. The method of claim 2, wherein generating the soft decision includes using a sign function to calculate a decision as to whether the non-pilot symbol is a 1 or a –1.

16. The method of claim 1, wherein the first wireless signal is a spread spectrum CDMA signal.

17. The method of claim 3, wherein weighing each non-pilot symbol includes weighing each non-pilot symbol according to strength of the first wireless signal.

18. The method of claim 3, wherein weighing each non-pilot symbol includes weighing each non-pilot symbol according to a signal-to-noise-plus interference ratio associated with the first wireless signal.

19. The method of claim 5, further comprising calculating cross-products to calculate residual frequency error estimates and accumulating the cross-products to calculate an estimated frequency error of the first wireless signal.

20. The method of claim 1, wherein the non-pilot symbols include transport format combination indicators, transmit power control indicators and feedback indicators.

21. A method comprising:

obtaining control symbols from a first wireless signal, the control symbols including pilot symbols and non-pilot symbols;

assigning a weight factor to each non-pilot symbol; and

using the pilot symbols and weighted non-pilot symbols for frequency tracking of the first wireless signal.

22. A computer-readable medium carrying program code that when executed:

obtains control symbols from a first wireless signal, the control symbols including pilot symbols and non-pilot symbols; and

uses the pilot symbols and the non-pilot symbols for frequency tracking of the first wireless signal.

23. An apparatus comprising:

a rotator that adjusts signal frequency of a signal; and

a feedback loop to the rotator that provides an estimate of a frequency error associated with the signal, wherein the feedback loop generates the estimate of the frequency error using pilot and non-pilot symbols.

24. The apparatus of claim 23, further comprising:

a transmitter/receiver that receives and conditions the signal before sending the signal to the rotator;

a demodulator that demodulates the signal after the rotator has adjusted signal frequency of the signal;

a symbol generator that obtains the pilot and non-pilot symbols; and

a digital signal processor that processes the pilot and non-pilot symbols.

25. The apparatus of claim 23, wherein the feedback loop includes a frequency discriminator and an accumulator, wherein the frequency discriminator calculates residual frequency error estimates using the pilot and non-pilot symbols and sends the residual frequency error estimates to the accumulator to generate the estimate of the frequency error.

26. The apparatus of claim 25, wherein the feedback loop includes a soft decision generator that generates soft decisions for the non-pilot symbols, wherein the frequency discriminator calculates residual frequency error estimates using the pilot symbols and the soft decisions.

27. The apparatus of claim 26, wherein the soft decision generator includes a hyperbolic tangent unit that generates the soft decisions.

28. The apparatus of claim 25, wherein the frequency discriminator includes a cross-product generator to estimate residual frequency errors.

29. The apparatus of claim 23, wherein the apparatus forms part of a RAKE receiver, the apparatus further comprising:

a number of rotators that adjust signal frequency of a number of signals tracked by a number of fingers; and

a number of feedback loops to the number of rotators that provide estimates of frequency errors associated with the signals, wherein the feedback loops generate the estimates of the frequency errors using pilot and non-pilot symbols.

30. An apparatus comprising:

an antenna;

a transmitter/receiver coupled to the antenna that receives a signal and conditions the signal;

a rotator coupled to the transmitter/receiver that adjusts frequency of the signal;

a demodulator coupled to the rotator that demodulates the signal;

a symbol generator coupled to the demodulator that obtains control symbols from the demodulated signal, the control symbols including pilot and non-pilot symbols;

a soft decision generator coupled to the symbol generator that generates soft decisions for the non-pilot symbols;

a frequency discriminator coupled to the soft decision generator that calculates residual frequency error estimates using the pilot symbols and the soft decisions; and

an accumulator coupled to the frequency discriminator and the rotator that accumulates an error estimate associated with the signal, wherein the rotator adjusts frequency of the signal based on the error estimate associated with the signal.

31. The apparatus of claim 30, wherein the apparatus forms part of a RAKE receiver, the apparatus further comprising:

a number of fingers that track a number of signals, wherein each finger includes a rotator, a demodulator coupled to the rotator, a symbol generator coupled

to the demodulator, a soft decision generator coupled to the symbols generator, a frequency discriminator coupled to the soft decision generator, and an accumulator coupled to the frequency discriminator and the rotator.

Page 4 of 5 pages